This presentation runs on its own.

No user intervention is needed.

This presentation is designed to inspire the direction of major

Internal Research Funding

to seed a

Bold New Mission for LANL

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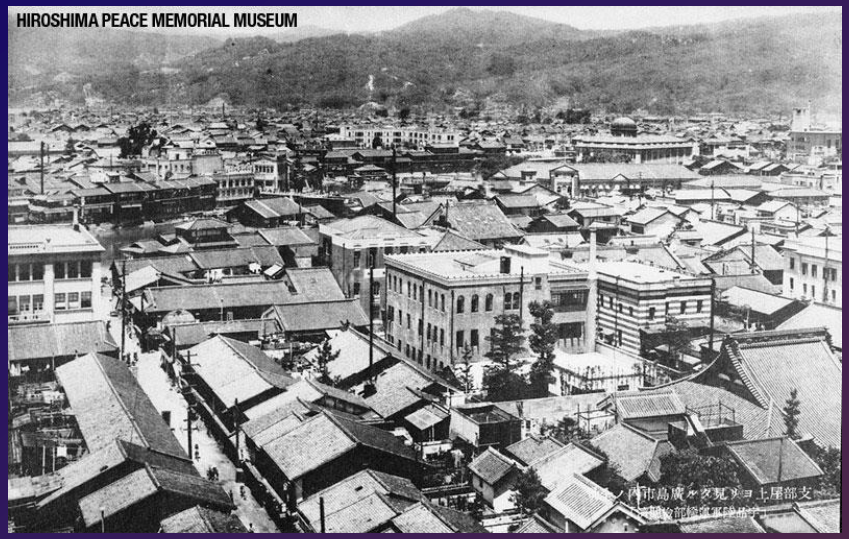
Randy Bos, Ph.D.

Los Alamos National Laboratory

The average American believes there is no use in planning cities to resist a nuclear attack.

But this:



Hiroshima, before the atomic bomb

is not the same as this:

Midtown Manhattan

And this:

is not the same as this:

Contrary to what the public thinks, a nuclear attack can be managed to reduce casualties.

But LANL's passiveness has implied that there is no hope.

If only the public knew, they would urge us to begin…

Using Computer Simulation to Plan

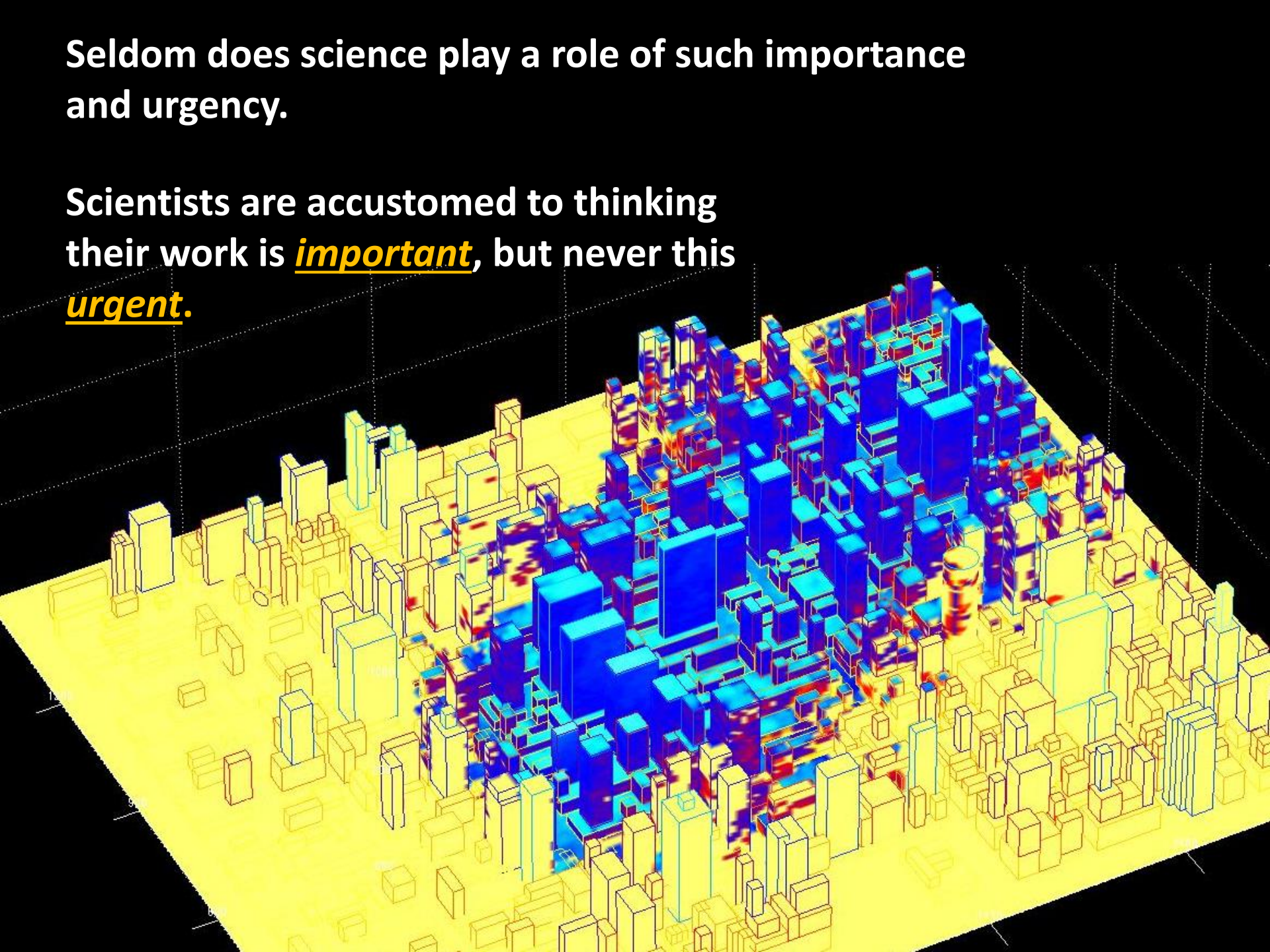
The Nuke-Resistant City

Los Alamos National Laboratory

"The World's Greatest Science Protecting America"

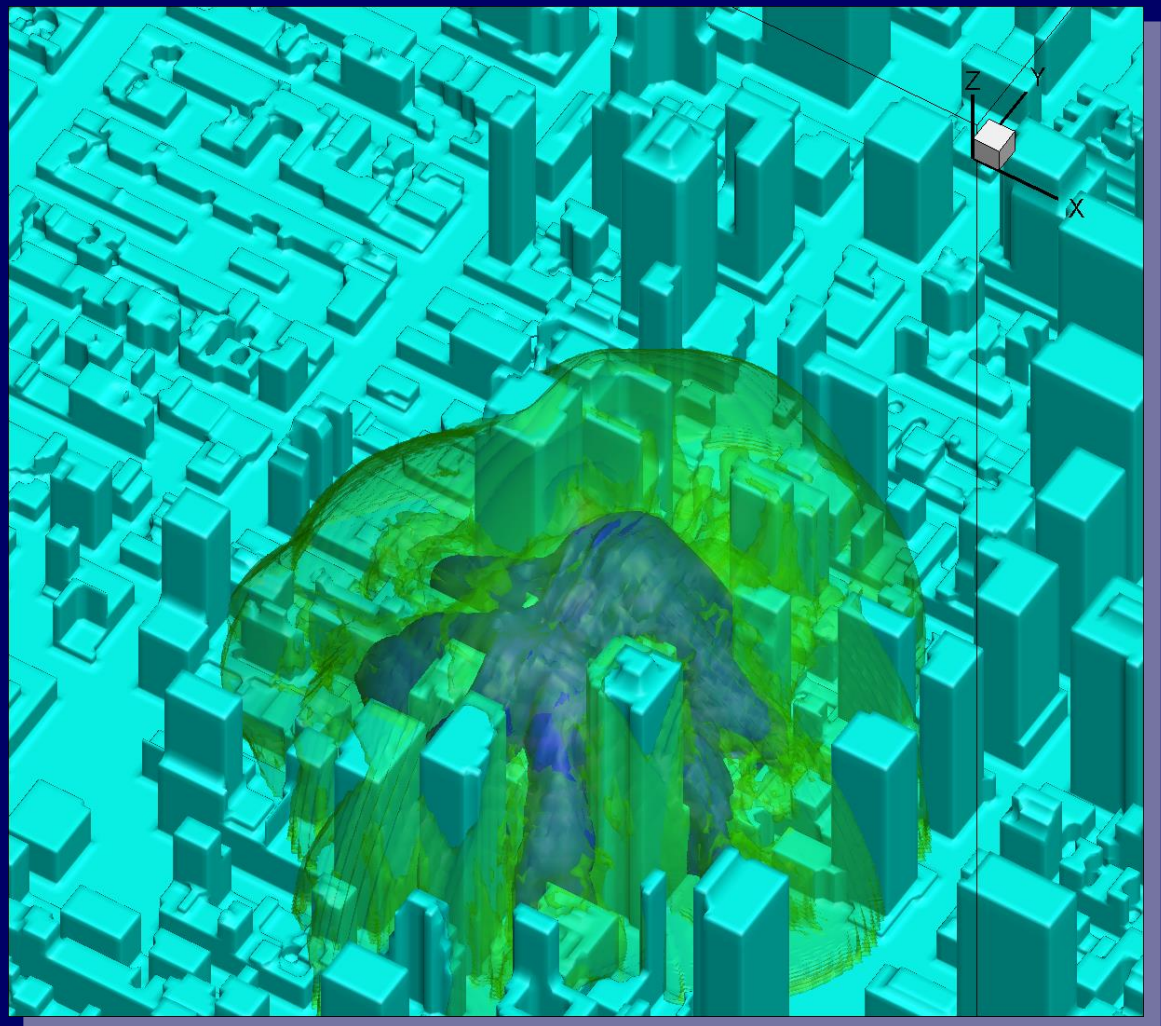
Seldom does science play a role of such importance and urgency.

Scientists are accustomed to thinking their work is *important*, but never this *urgent*.



The last time importance and urgency descended simultaneously in this way on science was the Manhattan Project.

It has descended again.



The time is now to focus efforts on helping cities prepare. And, in so doing…

Save lives

Advance scientific understanding

Secure the role of LANL and science in the US for the next 50 years

The Less Powerful Fission Bomb

of Hiroshima and Nagasaki

The massively destructive

Thermonuclear Bomb

of the Cold War

The policy of

Mutually Assured Destruction

which kept the Cold War cold.

The strong possibility of a

Terrorist/Rogue Attack

The Less Powerful Fission Bomb

Thermonuclear Bomb

Mutually Assured Destruction

In the mind of the average American, these issues are confused and mixed with disturbing images, resulting in

Terrorist/Rogue Attack

The Less Powerful Fission Bomb

Thermonuclear Bomb

Mutually Assured Destruction

DENIAL

Terrorist/Rogue Attack

The Less Powerful Fission Bomb

Thermonuclear Bomb

Mutually Assured Destruction

Unnecessary Fear

Terrorist/Rogue Attack

The Less Powerful Fission Bomb

Thermonuclear Bomb

Mutually Assured Destruction

POOR PLANNING

Terrorist/Rogue Attack

The Less Powerful Fission Bomb

Thermonuclear Bomb

Mutually Assured Destruction

It is our responsibility to tell the people that…

Terrorist/Rogue Attack

The Less Powerful Fission Bomb

in a

Thermonuclear Bomb

…is manageable.

Mutually Assured Destruction

It is our responsibility to tell the people that…

There is hope.

Our new threat…

Terrorist/Rogue Attack

But we must prepare.

We must tell the people that

We must tell the people that

The Threat We *Actually Face*

can be managed to *greatly* reduce casualties

Scientists have swayed the government before.

Einstein and Szilard

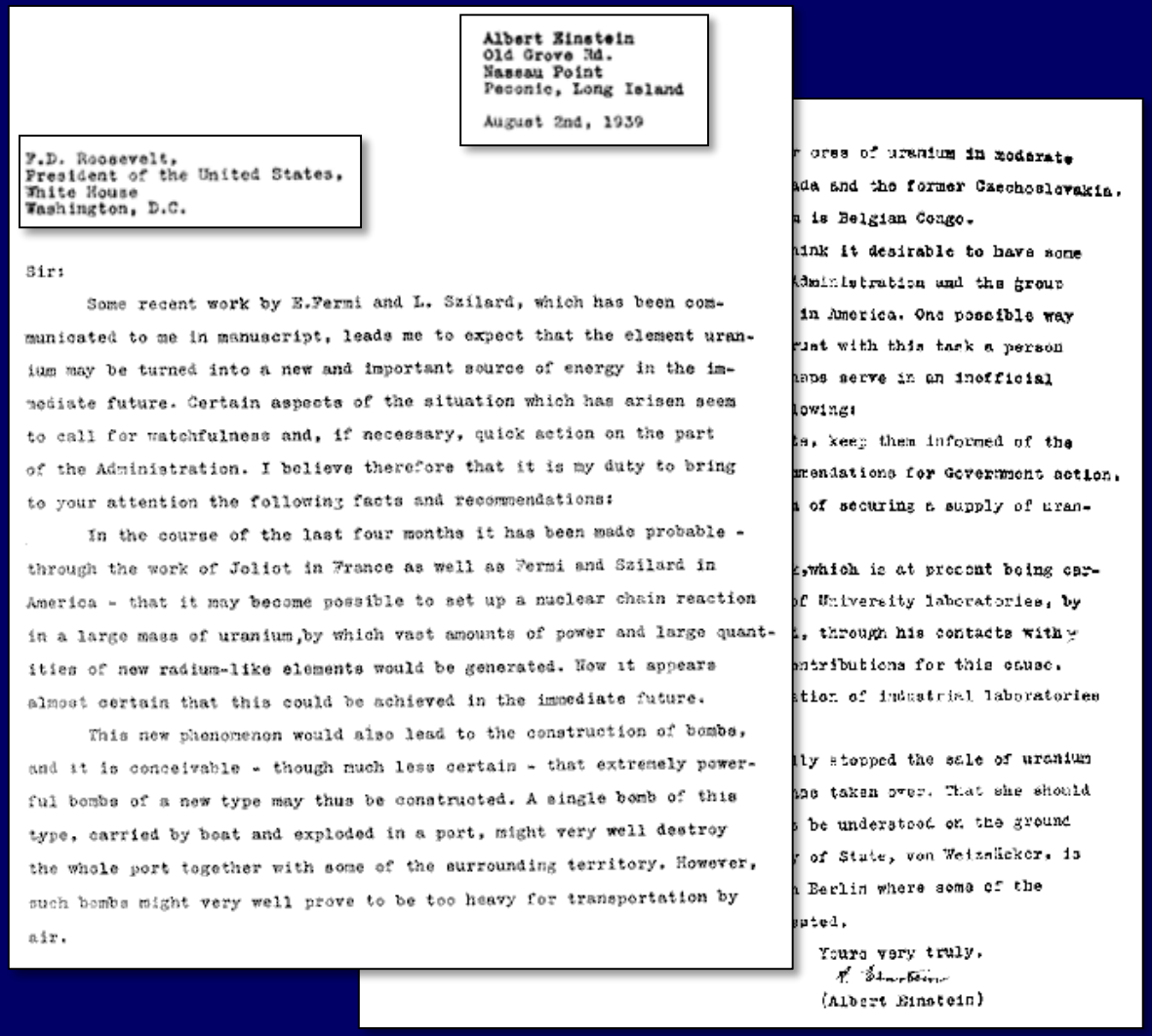
Scientists have swayed the government before.

It took

a great name

and initiative

to get the government's attention.



Albert Einstein
Old Grove Rd.
Nassau Point
Peconic, Long Island

August 2nd, 1939

F.D. Roosevelt,
President of the United States,
White House
Washington, D.C.

Sir:

Some recent work by E.Fermi and L. Szilard, which has been communicated to me in manuscript, leads me to expect that the element uranium may be turned into a new and important source of energy in the immediate future. Certain aspects of the situation which has arisen seem to call for watchfulness and, if necessary, quick action on the part of the Administration. I believe therefore that it is my duty to bring to your attention the following facts and recommendations:

In the course of the last four months it has been made probable - through the work of Joliot in France as well as Fermi and Szilard in America - that it may become possible to set up a nuclear chain reaction in a large mass of uranium,by which vast amounts of power and large quantities of new radium-like elements would be generated. Now it appears almost certain that this could be achieved in the immediate future.

This new phenomenon would also lead to the construction of bombs, and it is conceivable - though much less certain - that extremely powerful bombs of a new type may thus be constructed. A single bomb of this type, carried by boat and exploded in a port, might very well destroy the whole port together with some of the surrounding territory. However, such bombs might very well prove to be too heavy for transportation by air.

...ores of uranium in moderate
...ada and the former Czechoslovakia,
...n is Belgian Congo.
...think it desirable to have some
...Administration and the group
... in America. One possible way
...rust with this task a person
...ight serve in an unofficial
...llowing:
...ts, keep them informed of the
...mendations for Government action,
...of securing a supply of uran-
...,which is at present being car-
...of University laboratories, by
..., through his contacts with
...ntributions for this cause.
...tion of industrial laboratories
...ly stepped the sale of uranium
...ght be taken over. That she should
... be understood on the ground
... of State, von Weizsäcker, is
...n Berlin where some of the
...uted.

Yours very truly,
A. Einstein
(Albert Einstein)

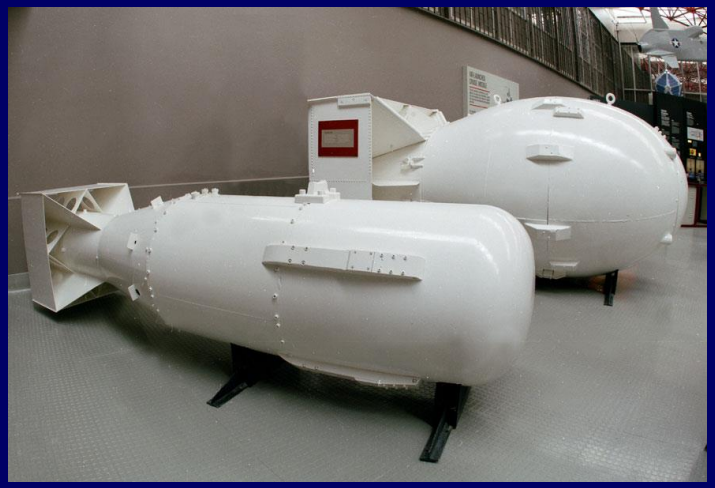
It took

a great name

and initiative

to get the government's attention.

We have the name.



We must take the initiative.

And so, this message will hopefully do ***more*** than inspire the use of internal research and development funding at LANL.

It will hopefully…

Inspire LANL staff to become involved in this bold new mission.

Lead to technical work that helps the government fund these life-saving measures.

What we Propose

Use LANL

Internal Research and Development funding

to create information and technology

that demonstrates to the
government there is hope

and that more needs to be done.

The

information and technology

will emerge from a

Computational and Experimental Program

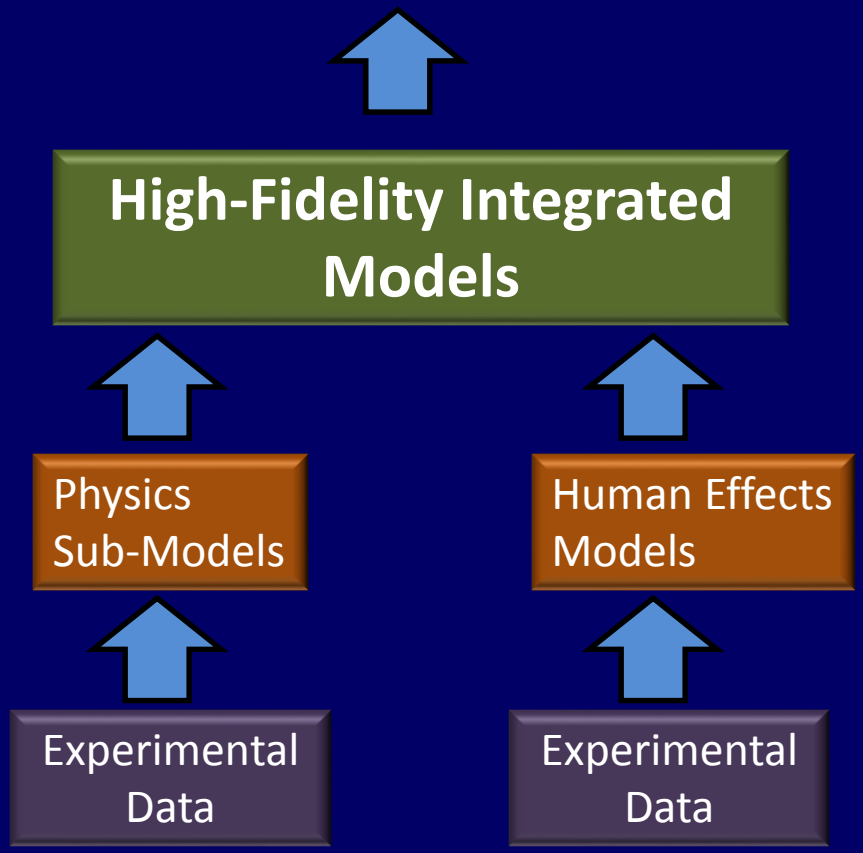
that will eventually grow under government funding.

We will Deliver

Models will provide predictions of all the consequences of a nuclear attack for any point in any major US city.

Massive integrated computations

Validated by massive experimental program



The high-fidelity models will be used in advance to validate simpler fast-running models for use on the scene.

Run on the scene

Massive integrated computations

Laptop Nuclear Effects Advising Software

High-Fidelity Integrated Models

Physics Sub-Models

Human Effects Models

Experimental Data

Experimental Data

Validated by massive experimental program

It will answer

Run on the scene

Massive integrated computations

Laptop Nuclear Effects Advising Software

High-Fidelity Integrated Models

Physics Sub-Models

Human Effects Models

Experimental Data

Experimental Data

Validated by massive experimental program

Who is still alive?
Who should move, who should shelter in place?
How are the utilities and subways?
What's next?

LANL-Communication system will provide real-time updates to adjust models.

Laptop Nuclear Effects Advising Software

Run on the scene

High-Fidelity Integrated Models

Massive integrated computations

Physics Sub-Models

Human Effects Models

Validated by massive experimental program

Experimental Data

Experimental Data

Who is still alive?
Who should move, who should shelter in place?
How are the utilities and subways?
What's next?

LANL
Com. System

Laptop Nuclear Effects Advising Software

Run on the scene

Real-time data updates model

High-Fidelity Integrated Models

Massive integrated computations

Validated by massive experimental program

Physics Sub-Models

Human Effects Models

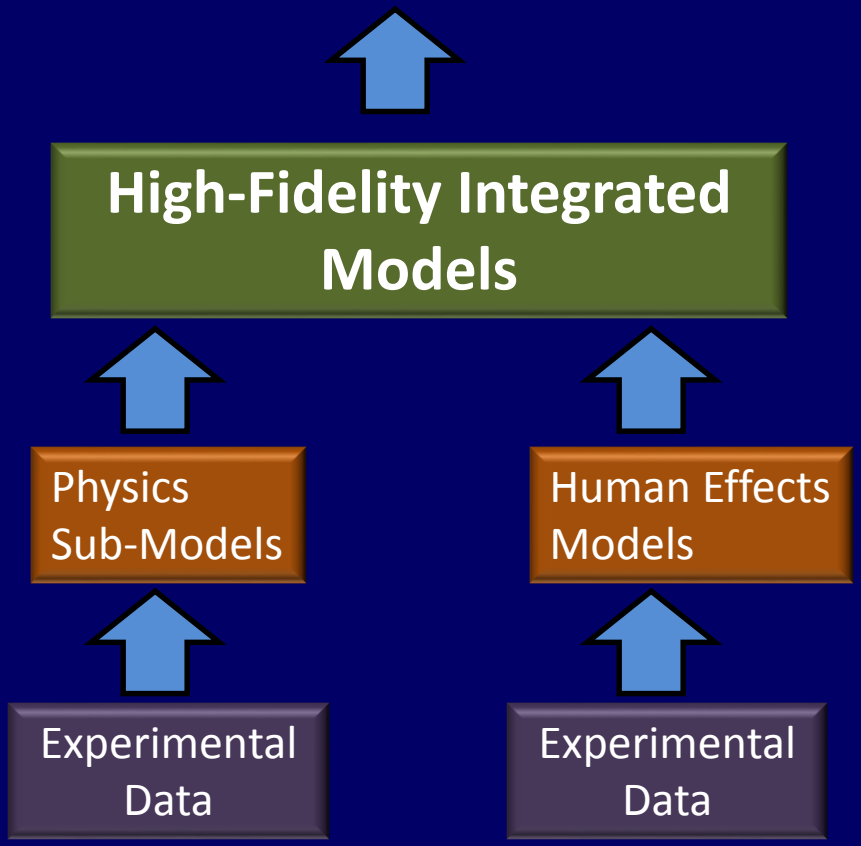
Experimental Data

Experimental Data

The high-fidelity models will also help cities plan in advance.

Validated by massive experimental program

Massive integrated computations



How many first responders might we need?
What should we train them to do?
What special equipment will they need?
What building codes need to change?

Comprehensive Planning Document

High-Fidelity Integrated Models

Massive integrated computations

Physics Sub-Models

Human Effects Models

Validated by massive experimental program

Experimental Data

Experimental Data

This endeavor will save lives through the application of

Broad Scientific Disciplines

in a tightly integrated effort.

How many first responders might we need?
What should we train them to do?
What special equipment will they need?
What building codes need to change?

Comprehensive Planning Document

High-Fidelity Integrated Models

Massive integrated computations

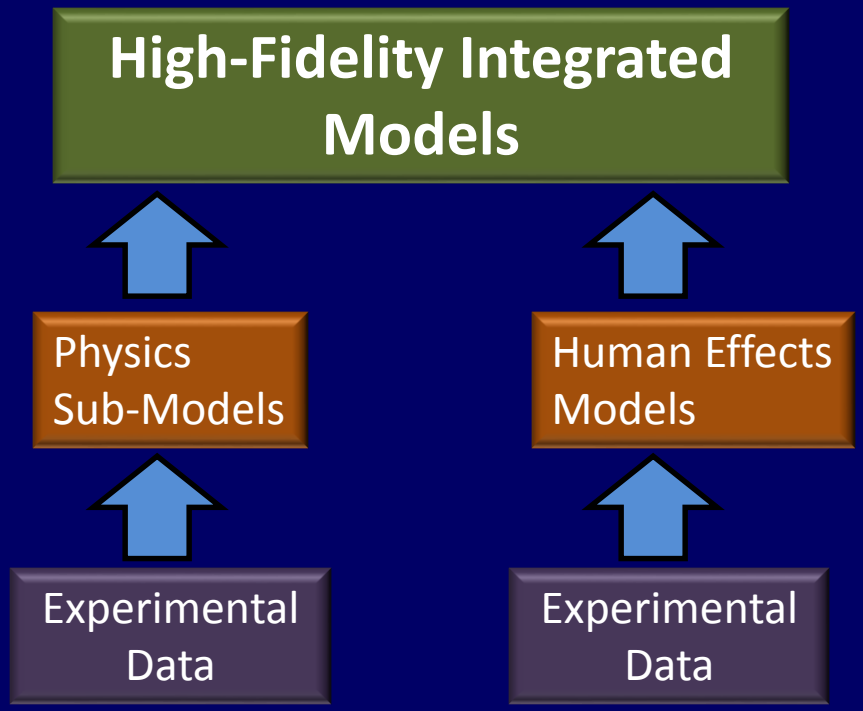
Physics Sub-Models

Human Effects Models

Validated by massive experimental program

Experimental Data

Experimental Data


High-Fidelity Integrated Models
Physics Sub-Models
Human Effects Models
Experimental Data
Experimental Data

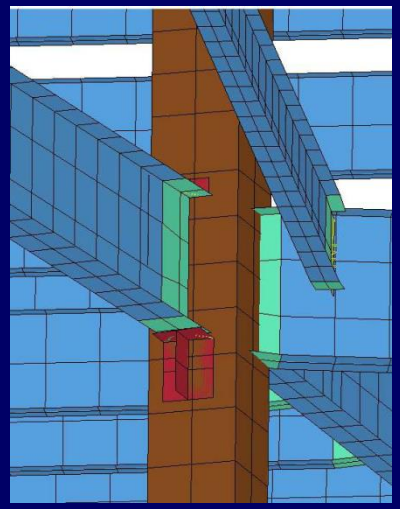
Physics Sub-Models

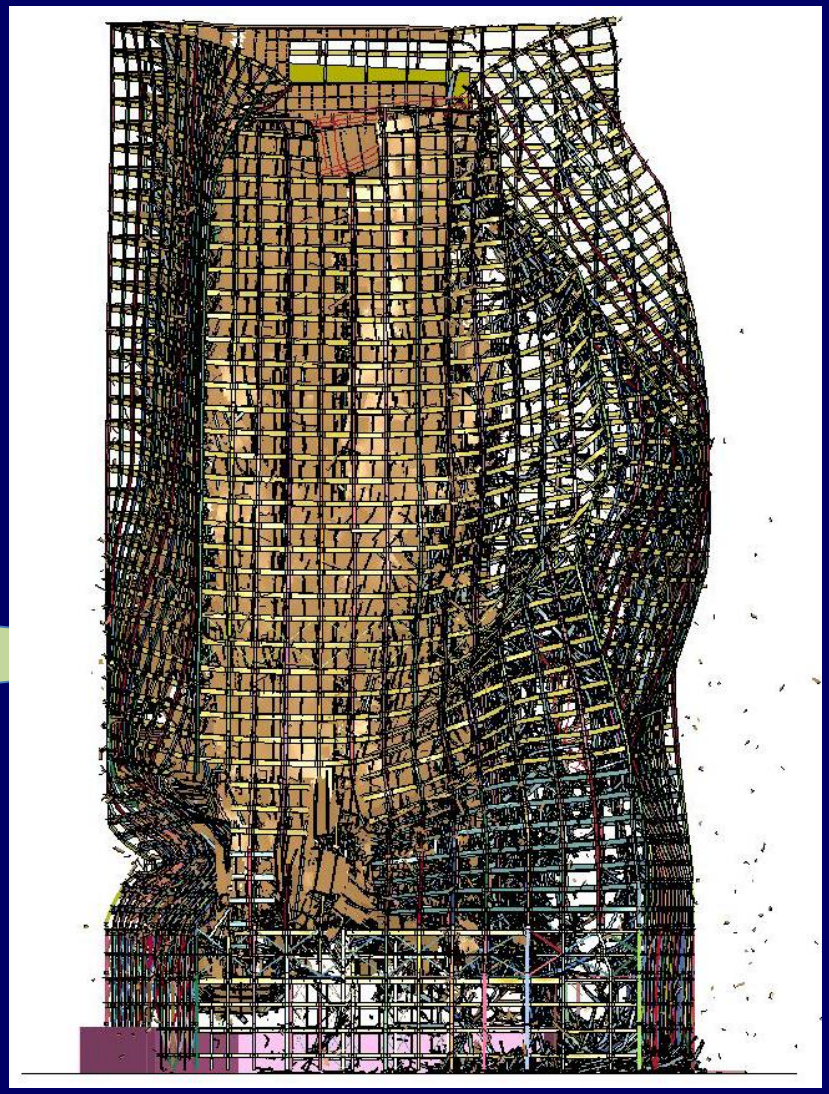
Modeling the impact of a nuclear detonation on a city is a daunting challenge.

But it is doable.

Physics Sub-Models

We can form highly detailed models for individual buildings…





911 Collapse as viewed from the South

Physics Sub-Models

And we can even model multiple types of buildings…

We know how to model physics such as blast waves and nuclear radiation…

Physics Sub-Models

But we cannot do that for every building...

Physics Sub-Models

In every city…

Physics Sub-Models

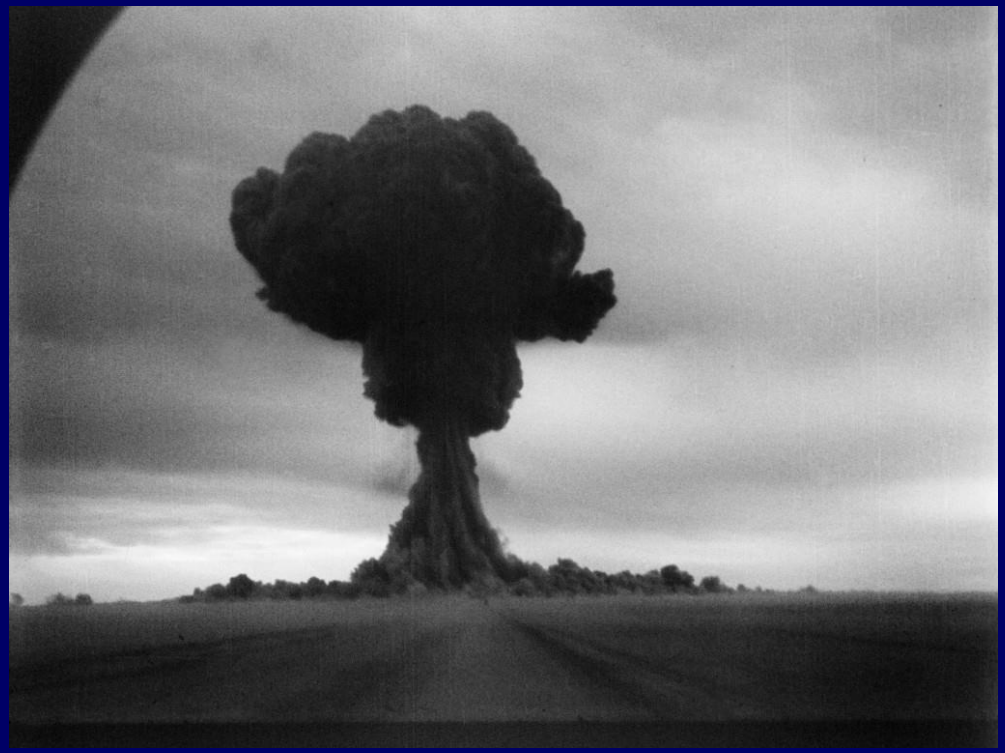
We must think about modeling in new ways.

We must combine multiple geometric scales, forming new kinds of simple models for buildings.

Physics Sub-Models

We must model the fireball

and the electromagnetic pulse

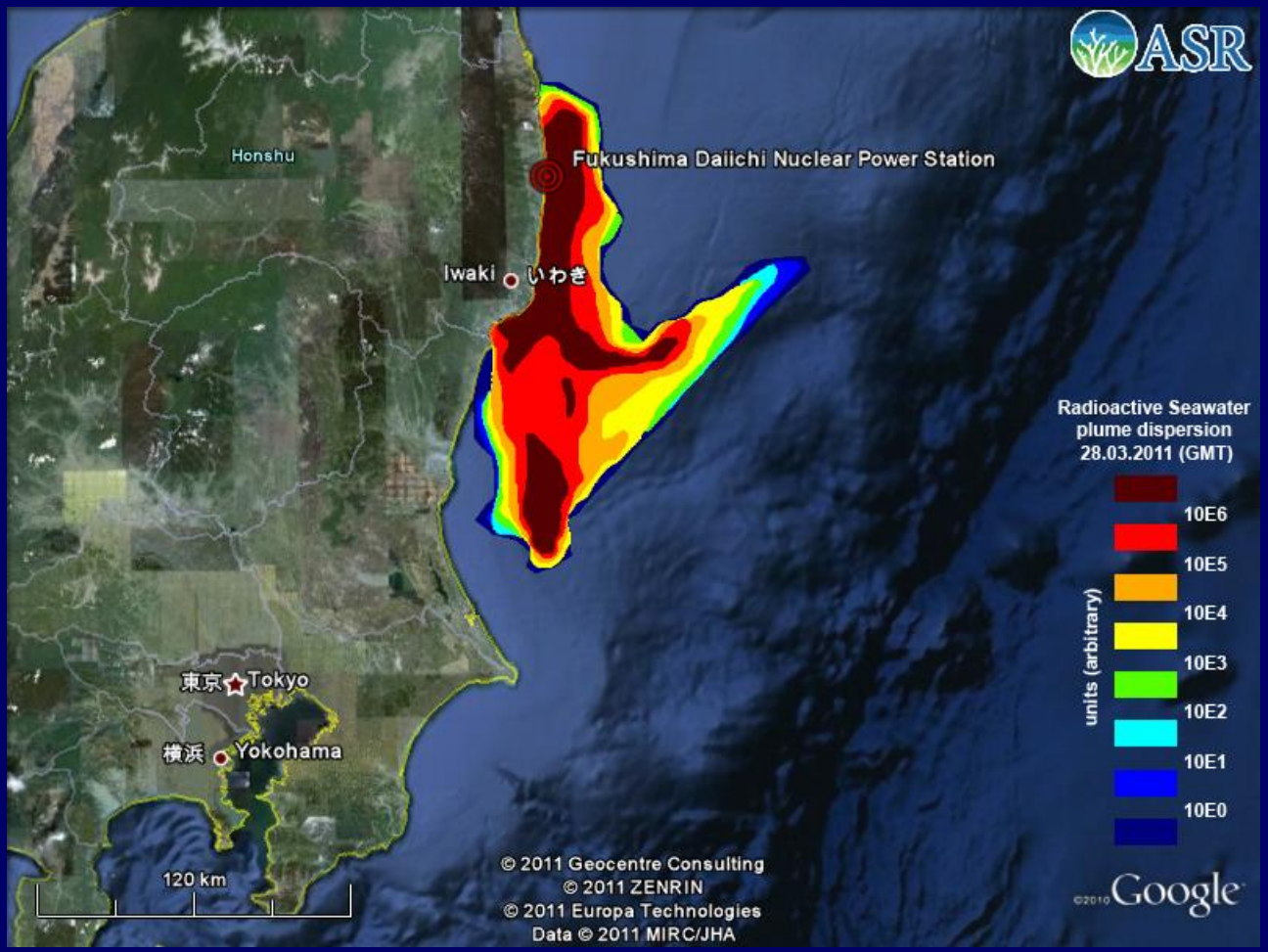


Physics Sub-Models

And the impact on subways and underground utilities.

Physics Sub-Models

As well as radiation contamination transport through the atmosphere



Physics Sub-Models

These models will need massive computational and experimental efforts that will challenge multiple scientific areas.

And we will have to model…

People

The people who are paying us and trusting us to do the right thing.

Physics Sub-Models | Sensor & Com. System | Experimental Data | Human Effects Models

Uniting LANL Behind a Bold New Mission

Helping to transform our funding agencies

Providing technical leadership for the United States and the world

Physics Sub-Models | Sensor & Com. System | Experimental Data | Human Effects Models

Uniting LANL Behind a Bold New Mission

Helping to transform our funding agencies

Providing technical leadership for the United States and the world

This will not be easy:

Helping to transform our funding agencies

We must integrate our technologies into tangible products (deployable software and real-time communication system).

LANL
Com. System

Real-time
data updates
model

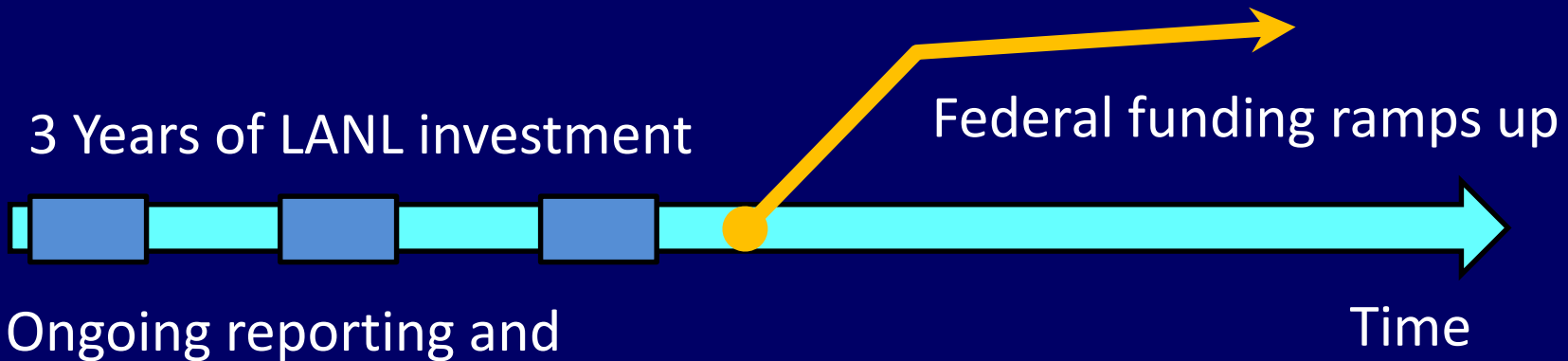
Laptop Nuclear Effects Advising Software

High-Fidelity Integrated Models

Run on the scene

Massive integrated
computations

We must combine our efforts with ongoing and organized promotional activities in Washington.



Ongoing reporting and promotional activities in D.C.

3 Years of LANL investment

This will be our Einstein Letter.

America has a

reactive culture.

Rally calls for overpass at dangerous Maryland intersection

On behalf of Palmeiro Law Group posted in Car Accidents on Monday, October 3, 2011

Parents and students rallied last week in Centreville, Maryland, to press the Queen Anne's County Board of Commissioners to fix a dangerous intersection that has been the site of multiple car accidents. The rally was sparked by the death of a 15-year-old boy as he was traveling to school on Sept. 16.

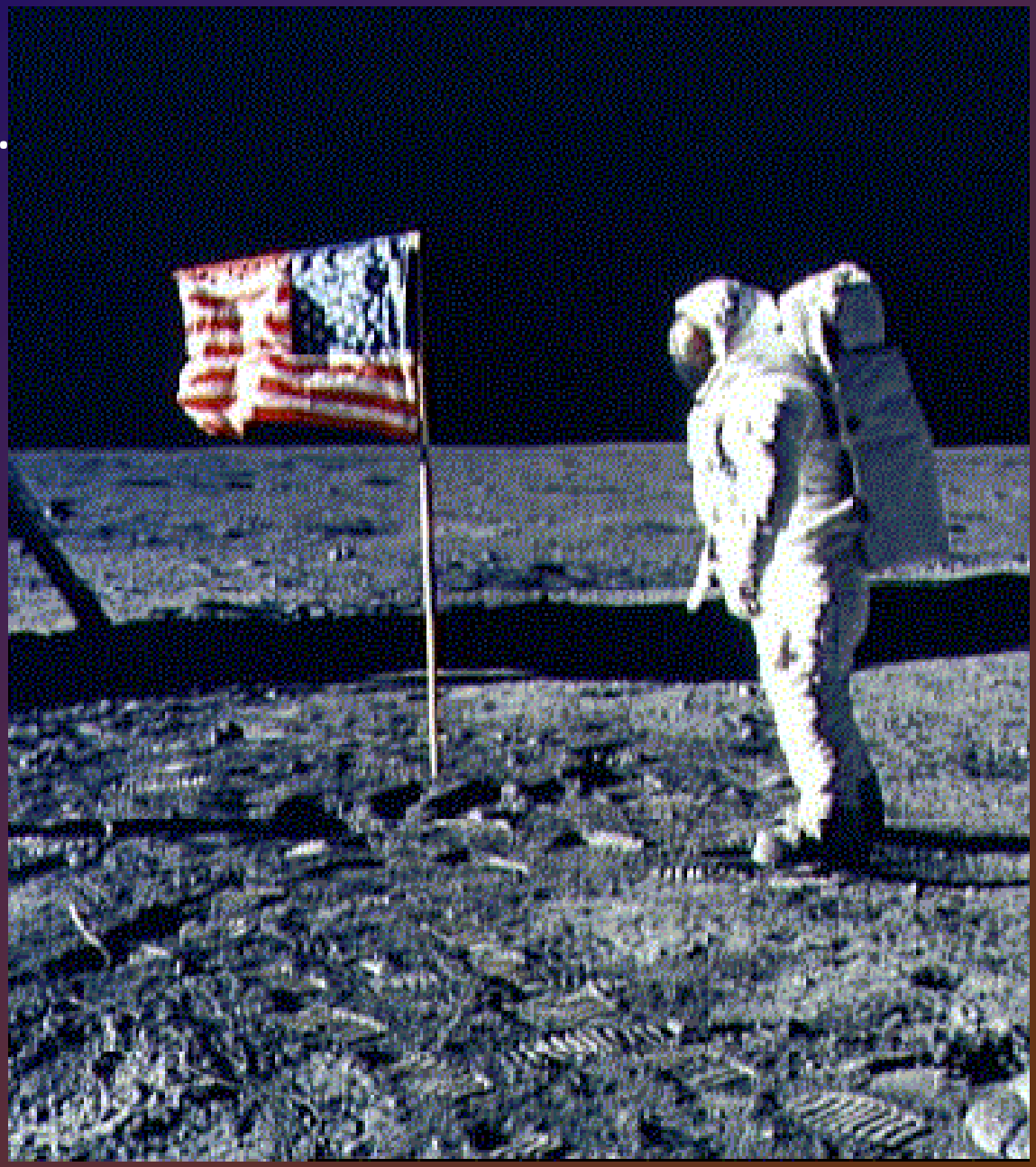
The boy was riding with two other Queen Anne's County High School students on state Route 304 when they were struck by a pickup truck at the highway's intersection with U.S. Route 301. Five people have died at the intersection since 2005, and area residents have complained that the Maryland State Highway Administration's remedy of a J-turn at the intersection is not good enough. Last week's rally was organized by Support an Overpass 4 Students, and many participants held signs that read "301/304 Kills."

One participant asked the county commissioners why it has taken so long to fix such a dangerous intersection. Commissioners said they agreed with the crowd, but that they could not fix the road because it is a state highway. They encouraged the crowd to take their complaints to the state government in Annapolis.

America has a

reactive culture.

And can react well when prompted.



But the public prompt isn't always heard.

By Brian Williams
Anchor & "Nightly News" managing editor

NBC News
updated 8/28/2006 8:03:20 PM ET

Print | Font: A A + −

NEW ORLEANS — As Katrina built up steam, the warnings were clear.

This is going to be one of the strongest hurricanes ever to hit the United States, said National Hurricane Center Director Max Mayfield Aug. 28 as the storm approached.

One National Weather Service meteorologist even dispatched a prophetic Katrina bulletin, warning: "Most of the area will be uninhabitable for weeks."

Yet despite that dire of a warning, to a lot of people it seemed as if few in government had been listening.

And there isn't always a gentle learning curve…

There were four airplanes that day.

Seldom and powerful are the moments when science prompts a ***proactive*** response.

It is time to do so now.

Of what value is science if it does not rise to this challenge?

The American people have preserved our capabilities for a time such as this.

Now we must deliver.